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TITLE: Over-expressing homologous antigen vaccine and a method of making the same

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CLAIMS:

What is claimed is:

1. A vaccine for immunization, prophylaxis or treatment of a vertebrate at risk of or suffering from Brucellosis, wherein said vaccine comprises an attenuated or avirulent strain of an otherwise pathogenic bacteria of the genus Brucella, and wherein said strain over-expresses at least one homologous antigen encoded by at least one gene from said bacteria and wherein said at least one antigen is capable of inducing a protective or therapeutic immune response in the vertebrate against Brucellosis.
2. The vaccine of claim 1, wherein said attenuated or avirulent strain of said bacteria further expresses one or more heterologous antigens from at least one other pathogen, and wherein said heterologous antigen is capable of inducing a protective or therapeutic immune response in the vertebrate against said other pathogen.
3. The vaccine of claim 1, wherein the bacteria is selected from the group consisting of B. abortus, B. melitensis, B. suis, and B. canis.
4. The vaccine of claim 1, wherein the bacteria is B. abortus.
5. The vaccine of claim 4, wherein the at least one gene is a Cu/Zn SOD gene.
6. The vaccine of claim 5, wherein the Cu/Zn SOD gene is obtained from a pUC19 genomic library of B. abortus strain 2308.
7. The vaccine of claim 4, wherein the at least one gene is one or both of a GroES gene and a GroEL gene.

8. The vaccine of claim 7, wherein the GroES gene and the GroEL gene are obtained from a pUC19 genomic library of B. abortus strain 2308.

9. The vaccine of claim 1, wherein the vertebrate is bovine.

10. An attenuated or avirulent strain of B. abortus that over-expresses at least one homologous antigen encoded by at least one gene from said B. abortus, and wherein said at least one antigen is capable of stimulating a protective or therapeutic immune response against Brucellosis.

11. The attenuated or avirulent strain of B. abortus of claim 10, wherein the at least one homologous antigen is encoded by at least one gene selected from the group consisting of a Cu/Zn SOD gene, a GroES gene and a GroEL gene.

12. A method for immunization, prophylaxis or treatment of a vertebrate at risk of or suffering from Brucellosis comprising administering an effective amount of a vaccine, wherein said vaccine comprises an attenuated or avirulent strain of an otherwise pathogenic bacteria of the genus Brucella that over-expresses at least one homologous antigen encoded by at least one gene from said bacteria and wherein said at least one antigen is capable of inducing a protective or therapeutic immune response in the vertebrate against Brucellosis.

13. The method of claim 12, wherein said attenuated or avirulent strain further expresses one or more heterologous antigen from at least one other pathogen, and wherein said heterologous antigen is capable of inducing a protective or therapeutic immune response in the vertebrate against said other pathogen.

14. The method of claim 12, wherein the at least one gene is a Cu/Zn SOD gene in B. abortus strain RB51.

15. The method of claim 14, wherein the Cu/Zn SOD gene is obtained from a pUC19 genomic library of B. abortus strain 2308.

16. The method of claim 12, wherein the at least one gene is one or both of a GroES gene and a GroEL gene in B. abortus strain RB51.

17. The method of claim 16, wherein the GroES gene and the GroEL gene are obtained from a pUC19 genomic library of B. abortus strain 2308.

18. The vaccine of claim 4, wherein the attenuated or avirulent strain of said bacteria is B. abortus strain RB51.

19. The attenuated or avirulent strain of B. abortus of claim 10, wherein the attenuated or avirulent strain of B. abortus further expresses one or more heterologous antigens from at least one other pathogen, and wherein said heterologous antigen is capable of inducing a protective or therapeutic immune response against said other pathogen.

20. The attenuated or avirulent strain of B. abortus of claim 10, wherein the attenuated or avirulent strain of B. abortus is B. abortus strain RB51.

21. The method of claim 12, wherein said pathogenic bacteria is B. abortus.

22. The method of claim 21, wherein said attenuated or avirulent strain of said pathogenic bacteria is B. abortus strain RB51.

23. The method of claim 12, wherein the at least one homologous antigen is encoded by at least one gene selected from the group consisting of a Cu/Zn SOD gene, a GroES gene and a GroEL gene.